

on each side. Elytra rufous on the sides, parallel, convex, cut off square at the apex, densely and distinctly punctured, suture a little raised. Epipleuræ bistriate. Legs rufous. Antic tibiæ dilated, five-dentate. Length .1.

The European species, to which this is very nearly allied, has no margin to the thorax, but merely a marginal stria. Our species wants the small furrow at the exterior base of the margin of the thorax. The thorax is moreover more finely and sparsely and the elytra more coarsely punctate.

In my Monograph of these insects, the American was considered identical with the European species.

### Contributions to American Lepidopterology.---No. 2.

BY BRACKENRIDGE CLEMENS, M. D.

#### TINEINA.

#### LITHOCOLLETIDÆ.

Imago with pointed or almost caudate anterior wings, with the costal nerve rather short and nearly coincident with the basal portion of the anterior margin; with the subcostal simple from the base to the apical third of the wing, where it delivers to the costa two or three very short marginal nervules (except in *Tischeria*;) with the discoidal cell usually acute behind, with one or two branches to the tip of the wing; with the median simple nearly to the tip, and dividing into two approximated nervules, with the submedian simple. The posterior wings linear-lanceolate, with a very short costal nerve at the base; with the subcostal nerve simple; with the median nerve simple and both rather faintly indicated.

#### TABLE OF GENERA.

*Head with a tuft above.*

Tuft abundant and hairy.

Antennæ simple.

*Lithocolletis*.—Anterior wings with *two* subcosto-marginal veins and *one* from the apex of the discoidal cell.

Tuft little exceeding the front, *scaly*.

Antennæ ciliated in the ♂.

*Tischeria*.—Anterior wings with *four* subcosto-marginal veins, the first from near the basal third; discoidal cell not pointed and *two distinct* discal nervules.

Tuft scanty, not overarching the vertex.

*Leucanthiza*.—Anterior wings with *three* subcosto-marginal veins; discoidal cell acute, with *two distinct* veins from the apex.

*Head smooth.*

*Phyllocnistis*.—Anterior wings with *three* subcosto-marginal veins; discoidal cell pointed with a single vein from the apex, furcate near the tip.

#### LITHOCOLLETIS Zeller.

Head roughened with an abundant tuft of hairs overarching the vertex. Front smooth, broad and retreating or much retreating. Ocelli none. Eyes scarcely visible and partially covered with scales. Antennæ simple, hardly shorter than the anterior wings, with the basal joint moderately thickened, but not expanded into an eye-cap. Maxillary palpi none. Labial palpi filiform and drooping, (in the living insect ascending.) Tongue naked, about as long as the anterior coxæ.

\* This genus and the one preceding it, belong to the family Lyonetidæ in the system of European writers. The close relationship indicated in the structure of the perfect insects, and the general harmony of their histories, do not, however, in my own view, authorize the separation of the genera here described, into distinct families.

The anterior wings are pointed (from the outline of the cilia appearing to be elliptical,) the posterior luccolate. In the anterior wings the discoidal cell is *acute behind*; the subcostal nervure sends two short branches to the costa, and from the apex of the discoidal cell a single vein to the tip. The median nervure sends two veins to the inner margin near the tip. In *Desmodiella* there is but *one* subcosto-marginal vein. In the posterior wings both the subcostal and median nervures are simple.

There are two larval forms in this genus. In the first, the head is much longer than broad, *acutely ellipsoidal*, with the sides rather thick and rounded; the body is cylindrical, submoniliform and the thoracic rings somewhat swollen. In the second, the head is thin and flattened, with the mandibles forming an appendage in front; the body flattened, deeply incised and mammillated on the sides. In both groups there are *three* pairs of thoracic feet, *three* of abdominal and a terminal pair, but shorter in the second than the first.

The larvæ mine the upper and under side of leaves, the larvæ of the first group usually throwing the leaf into a fold and feeding from the margins of the mine to the center; those of the second forming a flat mine, sometimes a rather broad linear tract and sometimes an irregular blotch, their mandibles being capable of working only in a horizontal direction. They change into pupa within the mine, some weaving a firm cocoon, some suspended in a web, and some forming a cocoon of grains of excrement and silk, or constructing the outline of the cocoon with them. The cocoons of the second group are shown on the separated epidermis as a circle and an almost hemispherical protuberance on the under surface.

The perfect insects rest with the antennæ thrown backward beneath the wings, some with the head slightly elevated, others with the head applied to the surface and the body behind elevated. I think the majority of the species here described assume the latter position, with variations in the angle formed with the surface on which they rest.

*Table of Species.*

I.—With an apical spot.

*Without a basal streak.*

- Fore wings golden above the fold.  
 2. *Robiniella*, dark cinereous beneath the fold, sometimes rather silvery.  
 Fore wings pale reddish-saffron, with golden hue.  
 4. *Æriferella*, with the first dorsal streak black-margined internally and at tip behind.  
 Fore wings deep reddish-orange.  
 10. *Obstrictella*, with three silvery bands; apical spot with one or two silvery scales.

*With a basal streak.*

- Fore wings silvery.  
 Basal streak black.  
 6. *Argentifimbriella*, with the streaks decidedly dark-margined; golden towards the tip.  
 Basal streak golden.  
 1. *Lucidicostella*, with the streaks not decidedly margined; suffused with golden.  
 Fore wings pale golden.  
 Silvery basal streak black-margined.  
 7. *Obscuricostella*, with inner margin at base of the general hue.  
 Silvery basal streak unmargined.  
 8. *Ostryæfoliella*, with inner margin at base with a white streak.

II.—With an apical spot.

‡ Apex concolorous and not dusted.

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*With a basal streak.*

Fore wings shining ochreous-saffron.

5. *Basistrigella*, with first costal and dorsal streaks unmarginated.

*With no basal streak.*

Fore wings ferruginous brown.

3. *Desmodiella*, ruby tinted at base, with two silvery bands.

Fore wings silvery.

9. *Lucetiella*, golden toward tip, with a black costal spot and opposite black line.

?? *An oblique costo-apical white streak or spot.*

Apex not dusted with dark scales.

Fore wings reddish-orange.

12. *Aceriella*, with a short dorsal streak near the base, two silvery bands, an oblique dorsal streak near the tip, and a costal spot above it.

Apex dusted with dark scales.

12. Var. *Aceriella*?

???

*With dispersed, dark, apical scales.*

Fore wings reddish-orange.

With three silvery bands.

11. *Caryæfoliella*, black margin of the second band produced, apical scales on a white ground.

With two silvery bands.

13. *Guttifinitella*, black margin of second band not produced; a costal and dorsal spot near the tip,

Fore wings white.

15. *Hamadryadella*; branded with shining ochreous-saffron; irrorated with black.

*With a basal streak.*

5. *Basistrigella*, (sometimes,) with *four* costal and *three* dorsal slender streaks.

16. *Argentinotella*, with *five* costal and *four* dorsal conspicuous streaks.

???? *With a median, black, apical streak.*

Fore wings dark brownish-golden.

14. *Cratægella*, with a silvery basal streak, black-margined above.

1. *L. lucidicostella*.—Antennæ white. Head and tuft silvery-white. Fore wings, basal portion silvery white to the middle, *with a discal pale golden streak* from the base, retreating from the costa before reaching the middle of the wing, and somewhat suffused with golden beneath the fold. From the middle to the tip, pale golden, with four costal silvery streaks, dark-margined internally, and two dorsal silvery streaks, the first opposite the second costal streak, and both dark-margined internally; *the first costal streak not decidedly dark-margined*. Apical spot, black. Hinder marginal line in the cilia, dark brown; cilia pale gray. Hind wings shining bluish gray; cilia gray.

The larva mines the under side of the maple leaf, *Acer saccharinum*, in July, Sept., and Oct. The head is pale brown; body pale green, colored darker by the ingesta. "Frass" collected into a ball within the mine. The pupa is suspended in a web of silk within the mine.

2. *L. Robiniella*.—Antennæ dark brown. Front silvery white, tuft dark brown mixed with grayish. Thorax dark brown. Fore wings golden yellow above the fold, and dark cinereous somewhat dusted with blackish beneath it. About the middle of the wing is an oblique, silvery costal streak, black-margined on both sides, extending to the fold; another beyond the middle, meeting nearly in the center of the wing at an angle, a dorsal streak from the inner margin, the former black-margined on both sides, the latter internally; another costal streak near the tip with an internal circular black margin, opposite to

a dorsal streak of the same hue and joined or nearly joined to it. Just behind the apical spot is a straight silvery streak, black-margined internally. Between the first and second dorsal streaks, is a short black streak in the fold. Apical spot, black and round, with a hinder marginal blackish line in the cilia; cilia grayish. Hind wings, shining dark gray, cilia the same.

The larva mines the underside of the locust leaf (*Robinia pseudo-acacia*) the separated epidermis of which is conspicuously white. It may be found in the latter part of September and the beginning of October. The pupa is contained in a white silken cocoon within the mine. The imago appears in the latter part of October, and early in November. I have not found a spring or summer brood in the leaf of the locust. The larva is cylindrical; the head pale brown; the body pale greenish white, with a red vascular line from the 5th to the 9th segment; on the 9th segment are two irregular patches, chrome yellow; sometimes these patches are wanting.

The under side of the leaf of *Amphicarpæa monoica* is also mined by a larva, which I believe is the same as that in the leaf of the locust. It may be found in the beginning of September, the imago in October. The imago differs very slightly from *Robiniella*, and I have no note of any difference in the larval state, and like *Robiniella* it weaves a white silken cocoon within its mine. The perfect insect differs from the foregoing species in the following respects: the wing *beneath* the fold is blackish at the base, with a silvery dorsal spot rather nearer the base than the first costal spot and exterior to the dark-margin, it is silvery, dusted with blackish; the *second* costal spot is not as distinctly angled in the middle and the apical spot is larger; in some specimens there are two dorsal white lines on the thorax. The general resemblance between the two is so marked that I consider it unnecessary to designate it as a variety, for it is undoubtedly, I think, the same insect.

*With a single subcosto-marginal nervule.*

3. *L. Desmodiella*.—Antennæ dark brown, tipped with a silvery hue. Front whitish, with a ruby-colored lustre; frontal tuft dark brown. Thorax with a splendid ruby hue. Fore wings ferruginous brown, ruby-tinted at the base, with two silvery bands dark-margined on both sides, one near the base and one in the middle of the wing. A costal and dorsal silvery spot near the tip, opposite to each other, and a costal silvery spot just before the tip, the two former dark-margined on both sides, and the latter slightly dark-margined. No hinder marginal line; the cilia opposite the last dorsal spot blackish, and the wing beneath the last costal spot golden-brown. Hind wings pale brownish gray, cilia the same.

The larva may be found in the leaf of *Desmodium viridiflorum* in July and early in August; it mines the under surface, usually near the margin, which is more or less folded, and the separated epidermis brown and hairy. I have no description of the larva. It becomes a pupa during the latter part of August, and is suspended within the mine in a very slight web of silk. The perfect insect is the smallest of this group that has come under my observation.

4. *L. Æriferella*.—Antennæ dark brown above, white beneath. Front silvery white; tuft dark brown. Fore wings pale reddish-saffron with a golden hue, especially from the middle to the base, with four silvery costal streaks, the first on the middle of the costa, and all except the last black-margined toward the base, the third but faintly, and the costa black from the base to the first costal streak. Three silvery dorsal streaks on the inner margin, the first two large and the third small, the first black-margined internally and around the tip behind, the second by a line curved above. Apical spot small and black, with the scales behind it having a bluish splendid lustre; hinder marginal line blackish; cilia dark grayish, with a fulvous hue. Hind wings dark gray, cilia fulvous.

The larva may be found in the leaves of oaks in September and early in Octo-

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ber. It makes a small mine on the under surface, and the leaf is thrown into a fold previously to pupation and the cuticles folded and corrugated. The pupa is contained in an ovoid cocoon within the mine, composed of "frass" and silk. The imago appears in May. The body of the larva is cylindrical. The head is pale brown; the body yellow, with a broad, vascular, reddish brown band. There is doubtless a spring brood, but I have not searched for the larva during the season.

5. *L. basistrigella*.—Antennæ silvery. Front silvery, tuft fulvous mixed with silvery. Thorax pale, reddish golden, with a white streak on each side and one in the middle. Fore wings shining ochreous saffron, with a slender, unmarginated white basal streak in the fold, a white basal streak along the costa, narrowly dark margined on the extreme costa, extended to the first costal streak, which is silvery white, very oblique and unmarginated; behind this are three small costal streaks of the same hue, the two central dark-margined internally. Opposite the first costal streak is a long, very oblique, silvery white dorsal streak, extended along the inner margin to the base, with dark brown scales between their hinder ends, or exterior to the tip of the dorsal streak, but sometimes absent. Nearly opposite the third costal streak is a dorsal silvery streak dark-margined internally. No apical spot, sometimes with dispersed dark brown scales beneath the last costal spot. The hinder marginal line blackish; cilia pale fulvous. Posterior wings gray, cilia gray with a fulvous hue.

The larva mines the under side of the leaves of oaks; I have usually found it in the leaf of the chestnut oak, in September. The mine is limited by two veins of the leaf, and when completed the external epidermis is left transparent. The "frass" is cast on the margins of the mine, and when the larva is prepared to enter the pupa state it collects the grains of "frass" and makes an oval outline of them within the mine, or wall to its cocoon, leaving the cuticles transparent, so that the pupa can be seen within. The imago appears early in May. The body of the larva is cylindrical. It is lemon-yellow along the dorsum, except the three anterior wings, which are whitish, with a series of dark brownish dorsal dashes beginning on the third ring; on the eighth ring, in some specimens, is a dorsal reddish orange patch. Head whitish, tinged with pale brown.

6. *L. argentifimbriella*.—Antennæ silvery, annulated with darkish brown. Head, front and thorax silvery white. Anterior wings silvery, pale golden from nearly the middle to the tip, with a long basal dark brown streak margined above with golden, extending nearly to the first costal streak. There are four silvery costal streaks all dark-margined, the first very oblique, the second convex toward the base of the wing. The first costal dark margin is decided and extended on the costa toward the base. Two silvery dark-margined dorsal streaks, the first opposite the second costal streak. The apical spot black; hinder-marginal line dark brown, cilia silver gray. Hind wings silver gray, cilia the same.

Found in the pupa state in the same leaf as the foregoing in the latter part of September. The pupa is suspended within the mine in a very thin silken web. The perfect insect appears early in May.

7. *L. obscuricostella*.—Head and frontal tuft silvery. Thorax very pale golden. Fore wings pale golden, with a silvery median stripe from the base, *black-margined toward the costa*, extending to the middle of the wing; with four silvery costal streaks, the first very oblique and rather long, and all except the last black-margined internally, the margin of the first being long and the continuation of a black streak from the base along the extreme costa. Three silvery dorsal streaks, the first quite long, obliquely curved and opposite the first costal streak, and the first two black-margined internally; *the second dorsal obliquely opposite the third costal streak*. Apical spot black; hinder-marginal line black, cilia grayish. Hind wings bluish gray, cilia the same. *Abdomen black, tipped freely with yellow.*

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The larva mines the leaf of *Ostrya Virginica* (hop-hornbeam) in September. I have no description of the larva, supposing at the time of capture it was the same as the succeeding species. The pupa was not contained in an ovoid cocoon made of "frass" and silk. The imago appears in May.

8. *L. Ostryæfoliella*.—Antennæ silvery. Front silvery, tuft fuscous and silvery mixed. Thorax silvery, with the basal part of tegulæ pale golden. Fore wings pale golden, with an unmarginated, median, silvery basal stripe, and a silvery streak along the basal portion of the inner margin. Fore wings pale golden, with four silvery costal streaks, all except the last black-margined internally; with two dorsal streaks of the same hue, black-margined internally. The first costal and first dorsal streaks opposite, quite oblique and broad at their bases, the second dorsal opposite the second costal streak. The basal streak is moderately broad, and extends quite to the middle of the wing. Apical spot black; hinder-marginal line blackish; cilia fulvous gray. Hind wings gray, cilia fulvous gray. Abdomen pale fulvous.

The larva mines the under side of the leaves of *Ostrya*, and may be found early in July and October. The mine is usually near the margin of the leaf, is flat at first, but is gradually thrown into a fold, the separated epidermis corrugated. When completed, the epidermis has changed to a pale brown color. The larva undergoes its transformation in a cocoon composed of "frass" and silk, in the form of a small ovoid ball suspended within the mine. The larva is cylindrical, with the body pale yellow, colored on the dorsum beyond the third segment, dark green from ingesta. The imago appears in August and May.

In the same leaf, mining the upper surface in a blotch mine, at first white and subsequently brown, may be found in October a *Lithocolletis* larva of a different type from the above. It tapers posteriorly, is flattened above and beneath, with the rings distinctly separated and mammillated at the sides; the first ring is rather abrupt anteriorly and much broader than the head. The head is somewhat triangular, flattened and thin, with the mandibles projecting in front as two small, rounded appendages. The head is pale brown, the body of the same hue, with dorsal, dark brown, elliptical maculæ, placed transversely on the segments. I have not seen the imago, and refrain from naming the species, lest it may be identical with some one hereafter described. The cocoon is circular, its outline being visible on the upper epidermis as a circle, while beneath it is raised and prominent.

9. *L. lucetiella*.—Antennæ silvery. Head, tuft and thorax silvery. Anterior wings silvery from the base to the middle, and thence to the tip golden, with a golden costal streak from the base not extended to the middle. About the middle of the wing is a silvery band, broadly margined internally with golden, and with a minute black point on the costa internally; a costal silvery spot, margined internally by a black spot, nearly opposite to which is a large dorsal silvery streak margined internally by an oblique black line; near the tip is a costal, silvery, unmarginated streak curving to the tip; cilia golden, at the tip and on inner margin silvery. No apical spot nor hinder-marginal line. Hind wings silver gray, cilia the same. Abdomen blackish, tipped with silvery gray.

The larva mines the under side of the leaf of *Tilia Americana* (bass wood) in July, September and October. The mine is most frequently nearly square in form, and when completed both cuticles of the leaf are left nearly transparent, and the leaf is not folded. The "frass" is cast on the edges of the mine. It weaves an oval cocoon, thin enough, however, to permit the pupa to be seen through the cuticles. The larva is cylindrical. The head pale brown; the body pale greenish white, with a series of dorsal brown spots from the third ring posteriorly. The imago appears in August and May.

10. *L. obstrictella*.—Antennæ silvery beneath, blackish above, with

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a whitish band near the tip. Front silvery, with a reddish tinge on the forehead. Tuft and thorax reddish orange. Fore wings deep reddish orange, with three silvery bands black-margined exteriorly, one beyond the middle toward the base, one about the middle and one near the tip. A large black apical spot, with a few silvery scales or minute spots; hinder-marginal line dark brown, cilia reddish orange. Hind wings blackish, cilia blackish brown. Abdomen black.

The larva mines the under surface of oak leaves, in September. I did not open the mines of the specimens I secured as I had but two. The larva was cylindrical, and through the unruptured cuticle appeared to be of a lemon yellow color. The pupa was contained in a very slight web within the mine. The imago appeared in May. The larvæ which I secured were taken in the leaves of the *black oak* on September 23d.

11. *L. Caryæfoliella*.—Antennæ silvery, annulated with blackish. Front silvery. Tuft and thorax reddish orange. Fore wings reddish orange, with three silvery bands, black-margined exteriorly, the second about the middle of the wing, angulated, with the black margin broad and produced posteriorly on a whitish ground, nearly to the third, which is somewhat interrupted in the middle; the first midway between the second and base of the wing and also angulated near the costa. The apical portion of the wing white, covered with dispersed black scales, with a few black scales on a whitish ground, on the costa, between the last silvery band the dusted apical portion; with two hinder-marginal lines, one the margin of the apical scales, the other a dark brownish line in the cilia. Hind wings pale brownish gray, cilia gray, with a fulvous hue.

The larva mines the upper side of the leaves of the hickory tree in June, July and September, making a white blotch, or an irregular, rather broad tract when there is but one in the leaf; and not throwing the leaf into a fold. Frequently there are several larvæ in a leaf, in one instance I counted twelve. The "frass" is deposited along the middle of the mine. The larva is flattened, and its physical characteristics are similar to those of the second larval group. The head is very light brown; the body dark lead color, becoming yellowish posteriorly, with the mammillæ of the thoracic rings yellowish, and a central spot of the same hue on the first; each ring on the dorsum with a dark brown, shining macula, those on thoracic rings trapezoidal, the remainder oval; on the ventral surface the maculæ are also dark brown, those on the fourth and fifth rings being oval. The perfect insects of the spring brood appear in August; from the fall brood I did not succeed in rearing the imago.

12. *L. aceriella*.—Front silvery, tuft reddish orange and silvery mixed. Thorax reddish orange. Fore wings reddish orange, somewhat metallic, with a white streak black-margined exteriorly, from the inner basal angle to the fold; with two oblique, silvery bands black-margined behind, one about the middle of the wing and the other midway between it and the base of the wing. Near the tip is a costal silvery spot, black-margined behind, with an opposite, oblique, dorsal streak of the same hue, likewise black-margined behind, and an oblique, costal, silvery streak continued on the line of the last dorsal, running into the cilia just before the tip, black-margined above, at the tip before, and below at the tip behind; scarcely with a hinder-marginal line, cilia of the general hue. Hind wings plumbeous, cilia with a fulvous hue.

The larva mines the leaf of maple in September. It mines the upper surface of the leaf, making a flat, rather broad tract, casting its "frass" along the middle of the course of it. Physical characteristics those of the second larval group. Head pale brown; body yellowish green, with oval, dorsal, brown maculæ, darkest on their margins; thoracic rings on their sides pale yellowish. The cocoon is circular. The larva is likewise found in the leaf of *Hamamelis Virginia* (witch-hazel).

1859.]

I have two or three other specimens which appear to unite the specific characters of the present and succeeding species, and I therefore decline to describe them until I have conducted more careful observations on their embryonic histories than I have instituted at present.

13. *L. guttifinitella*.—Front silvery, with a reddish hue. Tuft and thorax reddish orange. Antennæ blackish brown. Fore wings rather deep reddish orange, with two silvery bands black-margined behind, one in the middle of the wing and nearly straight, the other midway between this and the base of the wing and obliquely placed. Before the costo-apical cilia is a costal, silvery spot, black-margined on both sides, with an opposite dorsal spot, black-margined behind. The apical portion of the wing is dusted with blackish, dispersed scales with a white spot near the tip above the middle of the wing. There are two hinder-marginal lines, one the margin of the dispersed scales, the other dark brownish in the cilia.

The larva may be taken in August and September in the leaf of *Rhus toxicodendron* (Poison Oak) mining the upper surface in a rather broad, tortuous tract, and there are ordinarily several in the same leaf. The larva belongs to the second larval group. The head is a fine pale brown; the body yellowish posteriorly, becoming brownish above, with dorsal and ventral dark brown maculæ. The cocoon is circular, formed within the mine as usual in this group in a little circular depression.

It is probably unnecessary to caution the collector to be careful in handling the leaves of the food-plant of this larva; to many persons they are poisonous, producing a very disagreeable and uncomfortable eruption. I was affected by it when I first collected this species, and would advise all others to handle the food-plant "with gloves."

14. *L. cratægella*.—Antennæ, front and tuft dark silvery gray. Fore wings rather deep brownish golden, with a broad silvery basal streak, black-margined toward the costa, extended to the tegulæ in front and pointed behind, with the point black-margined on both sides and with the costa black. Four costal silvery streaks, the first oblique but rounded beneath and black-margined on both sides, the others toward the base alone. Three silvery dorsal streaks, the first rather broad, oblique, nearly touching the first costal, and black-margined on both sides as also the second; the third only toward the base. A streak of black scales in the middle of the wing at the apex, extended backwards between the streaks to the second dorsal and costal. Hinder-marginal line blackish, with a violet metallic hue; cilia dark fulvous.

The larva mines the underside of black thorn during September and October. The mine is usually limited by two veins of the leaf. The larva is cylindrical, with a very pale brown head; the body yellowish, colored dark green by the ingesta. The imago appears in April and May.

15. *L. hamadryadella*.—Front, tuft and thorax white. Antennæ white, annulated above with blackish. Fore wings white, with an angulated, shining, ochreous saffron band, rather behind the basal third of the wing, black-margined internally with dispersed scales; a broad angulated band of the same hue, behind the middle, black-margined internally with dispersed black scales, produced in the middle, so as to divide it into two portions, with the space between the bands somewhat suffused behind the second with ochreous saffron, and an irregular line of blackish dispersed scales through the middle of it. Near the tip is a costal and dorsal ochreous saffron spot, with the white space between these and the second band dusted with blackish, with the apical portion white, dusted with black scales, and connected with the patch before it by a line separating the costal and dorsal spots. The basal portion of the wing somewhat dusted with black, with a small blackish patch on costa near the base and two small, faint saffron patches beyond it. The hinder-marginal line blackish, cilia with a fulvous hue. Hind wings rather dark silvery gray, cilia with a fulvous hue.

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## Variation F.

The first ochreous saffron band interrupted in the middle, with a broad internal margin of scattered scales, produced behind in the middle; the second somewhat diffuse, with the irrorated portion of the wing spreading out behind from the produced part of its black-margin.

## Variation G.

With an angulated line of blackish scales before the first band and an ochreous saffron patch between its angle and that of the black-margin of the first band.

The larva mines the upper side of the leaves of oaks in July. The head is black, the body pale yellowish, with an ochre yellow patch on the dorsum of the eighth segment, a dark vascular line and a few dark subdorsal spots posteriorly. The imago appears early in August. The variations F and G were specimens found in the pupa state.

16. *L. argentinotella*.—Antennæ silvery. Front and tuft silvery. Thorax pale reddish saffron, with a rather short, unmarginal, silvery basal streak, with *five* costal silvery streaks and *four* dorsal streaks of the same hue. The first costal and dorsal streaks unmargined, the first dorsal being near the inner angle of the base, tapering to a point in the middle of the wing from a very broad base; the first costal streak rather slender and only one-half as long as the first dorsal; the second costal and second dorsal connected about the middle of the wing, and dark-margined toward the base by a line much curved in the middle; the third costal and third dorsal opposite, and each dark-margined internally; the fourth dorsal about midway between the fourth and fifth costal streaks; sometimes the fourth costal and dorsal streaks with a few dark internal scales, sometimes unmargined. At the apex is a small patch of scattered black scales; the hinder-marginal line rather indistinct, cilia saffron, paler on inner margin. Hind wings shining silver gray, cilia rather darker.

I am unable to give any account of this species. The specimens were unmarked by any number referring to my notes, and I suppose I must have mistaken it for some other, as I did not observe its peculiar markings until I came to write the present paper. I hope, however, to supply its larval history next season, now that the species thus far met with are tabulated in a manner which will facilitate recognition.

The following genus belongs, in the arrangement of European systematists, to the family Elachistidae. I do not think any argument necessary to prove that it is a natural portion of Lithocolletidæ, which is usually regarded as being composed of a single genus.

## TISCHERIA Zeller.

Head with a rather erect frontal tuft of scales; the front smooth, narrow and but little inclined. Ocelli none. Eyes rather salient, *naked* and not covered with scales in front. Antennæ scarcely more than one-half so long as the anterior wing, with *rather long pilose ciliations* beneath in the ♂, simple in the ♀, with the basal joint tufted in front. Maxillary palpi *very short and scarcely perceptible*. Labial palpi short, filiform and drooping. Tongue scaled, as long as the anterior coxæ.

The wings with long cilia; the anterior pointed almost caudate, the posterior lanceolate. The discoidal cell of the anterior not pointed, closed in front by a *very faint nervure*, and with a *faintly indicated secondary cell*, beyond which the subcostal nervure is almost obsolete. The subcostal nervure sends *four veins* to the costa, the first of which is rather long and arises near the basal third of the wing; the discal emits a simple vein to the costa above the tip and one to the inner margin beneath. The median nervure send two veins to the inner margin near the tip. The submedian is simple.

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The head of the larva is circular in outline, thin, flat and nearly as broad as the first ring. The body tapers much posteriorly, is subcylindrical and moniliform, with the anterior rings slightly dilated, with the segments rounded and distinct at the sides; with three thoracic feet, four abdominal and one terminal pair, all of which are extremely short and are scarcely more than cup-like depressions.

The mine is usually made, if not always, near the margin of the leaf which, in this case is folded and curled so as almost to conceal the separated epidermis when completed, although in the beginning it is nearly flat. It contains no "frass," and an examination of the under surface reveals the presence of minute, round holes, through which the larva ejects its excrement. The pupa is contained within the mine, generally not in a cocoon, but the mine is carpeted throughout with silk, thus closing up the holes in the lower surface. The pupa case is thrust from the mine at maturity.

The imago reposes with its head elevated and the tips of the wings touching the surface on which it rests. The antennæ are thrown back beneath the wings, the anterior legs folded on the breast, the insect sustaining itself by means of the middle and posterior legs.

*Table of Species.*

Fore wings with isolated black atoms.

*Solidagonifoliella*; yellowish, slightly tinted with fuscous.

Fore wings immaculate.

Hind wings concolorous.

*Zelleriella*, yellowish, with reddish saffron at the tip.

Female? the entire insect reddish ferruginous.

Hind wings with a fuscous patch near the base.

*Citrinipennella*, bright yellow, reddish ferruginous at tip.

*T. solidagonifoliella*.—Head, thorax and antennæ pale yellowish. Fore wings yellowish, somewhat tinted with fuscous, with a short line of black atoms along the middle of the inner margin, two small patches or much scattered, isolated black atoms toward the base of the wing, a patch near the tip on the inner margin, with a minute patch or a few isolated atoms on the costa between the line and patch on inner margin; at the tip are a few isolated atoms. Hind wings very pale yellowish, cilia the same. The male described.

Found in the pupa state August 1st in the leaf of a species of *Solidago*. The mine was on the upper surface and the leaf not folded. The pupa was contained in a *slight circular cocoon*, attached to the upper cuticle, which formed its upper walls. On August 9th the imago appeared, the pupa case having been thrust through the *under side* of the leaf.

*T. Zelleriella*.—Antennæ, head and thorax pale yellow. Fore wings yellowish, with reddish saffron along the middle and toward the tip; cilia reddish saffron, pale yellow on the inner margin. Hind wings bluish gray, *tinted with yellow externally toward the tip*, cilia yellow on the exterior margin toward the tip, internally pale yellowish gray.

*Female?* The head, thorax and fore wings yellowish, suffused with reddish ferruginous, darkest toward the tip. Hind wings dark gray.

The larva mines the leaves of oaks in September, making at first a white blotch on the upper surface, but subsequently the upper epidermis becomes brown and the margin of the leaf curled. The head is dark brown; the body yellowish, with the dorsum of the first segment blackish, with two lateral minute pale spots; a vascular dark green line. The imago appears early in May, and there is, therefore, a spring brood.

*T. citrinipennella*.—Antennæ pale fuscous; head and thorax yellowish, tinted with reddish saffron. Fore wings bright yellow from the base

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nearly to the tip; apical portion reddish ferruginous. Hind wings dark gray, with a fuscous patch near the base; cilia pale fuscous. The male described.

There is but little difference between this and the foregoing species, either in the perfect or larval state. The larva mines the upper surface of oak leaves, in September. The head is dark brown; the body yellowish green, with a double dark brown macula on the dorsum of the first ring; vascular line very narrow and dark green. A more careful observation than I have given these insects may prove them to be the same, or the latter a variation. I have but a few of each of them. The imago appears early in May, and a spring brood will be found in early summer.

#### PHYLLOCNISTIS Zeller.

Head smooth, elongated above and clothed with imbricated scales. Front with scales closely appressed, slightly retreating and broad at the *clipeus*. Forehead or vertex, globosely rounded. Ocelli none. Eyes scarcely visible in front and partially covered with scales. Antennæ simple, *one-third* less long than the anterior wings; basal joint scarcely with an eye-cap, somewhat enlarged and flattened, but smooth and squamose. Maxillary palpi none. Labial palpi very slender, and drooping (in the living insect they are ascending). Tongue very slender, *naked* and scarcely as long as the anterior *coxæ*.

The anterior wings almost caudate, the posterior lanceolate. In the anterior wings the discoidal cell is *acute behind*; the subcostal nervure sends three short branches to the costa, and from the apex of the discoidal cell arises a branch *furcate* behind the tip, one of the nervulets proceeding to the costa before the tip, the other to the inner margin. The median nervure sends two approximated veins to the inner margin near the tip. In the posterior wings the subdorsal is simple, ending in the tip, the median furcate near its marginal extremity.

The head of the larva is thin, flat and circular, with the mandibles forming an appendage in front on the median line similar to some of the lithocolletes larvæ. The body tapers somewhat posteriorly with the sides of the segments slightly projecting and flattened, with the general form rather cylindrical. It is without feet or prolegs, and is very inactive, making little or no voluntary movement when removed from the mine, and does not retreat in its mine when touched. The body is somewhat viscid.

The mine is a linear tract just wide enough to accommodate the body, long and winding. The larva does not consume all the parenchyma of the leaf along its tract, but simply separates the upper epidermis, so that it is not transparent. When full grown the end of the mine is enlarged and the cocoon woven in a little pucker of the leaf within the mine.

The perfect insect is very sluggish, at rest carrying its antennæ thrown backward, but arched somewhat above the dorsal surface.

*P. vitigenella*.—Antennæ brownish silvery, fuscous at the tip. Head and thorax silvery white. Fore wings silvery white, slightly golden toward the tip, with a blackish dorsal patch on the inner margin near the base. Somewhat behind the middle of the wing is a black oblique costal streak and a black line curving from the costa to the inner margin. At the tip is a circular black spot, and before it on the costa two short, straight, black streaks. At the extreme tip of the wing are two blackish, diverging streaks in the cilia, with one of the same hue in the cilia beneath the apical spot nearly joining a black hinder-marginal line; cilia silvery. Hind wings silvery, cilia the same.

The larva mines the upper side of the leaf of *Vitis cordifolia* and perhaps other species, in September and October. The imago appears in September.

#### LEUCANTHIZA.

*Head slightly hairy above on the vertex.* The front smooth, covered with closely appressed scales, broad, even beneath and somewhat inclined. The  
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forehead or vertex rather acutely rounded above or ridge-like. Ocelli none. The eyes scarcely visible in front, partially concealed by scales. Antennæ simple, nearly or quite as long as the anterior wings, the basal joint squamose and but little larger than the stalk. Maxillary palpi none. Labial palpi very slender and drooping. Tongue naked, as long as anterior coxæ.

The fore wings are almost caudate at the tip; the posterior lanceolate. The discoidal cell of the fore wings is *acute behind*, with *two veins* emitted at its point, one to the costa before the tip the other to the inner margin. The subcostal nervure sends three short veins to the costa and the median two approximated veins to the inner margin. In the hind wings the subcostal and median are both simple, and the *latter* extended to the tip.

The head of the larva is very thin and flat, with projecting mandibles in front. The body is much flattened, tapering anteriorly and posteriorly, the rings separated by rather deep incisions and their ends on the sides mammillated, the rings themselves being rather elongated ellipsoids. The thoracic feet are *three* and mere mammillæ; the abdominal three, but their appearance not very distinct, and a terminal pair. The larva approaches that of the second group of *Lithocolletis* very closely.

The mine is a conspicuous white blotch on the upper surface, generally occupying the greater portion of the leaf, and sometimes when two are present in the same leaf, the whole of it. A day or two previously to undergoing their last molting, the larva cease to eat, and at the end of that time leaving its "cast" within the mine abandons it to construct a white silken cocoon, which is woven on some substance on the surface of the ground.

The perfect insect holds the antennæ extended at the sides when at rest, and moves them with a rotatory motion during progression.

*L. amphicarpeæ foliella*.—Head golden, with fuliginous hairs above. Antennæ golden brown, with the tips silvery white. Thorax golden, fuliginous in front, and abdomen golden brown. Fore wings deep orange yellow, with the apical portion dark golden brown and a fuliginous or deep brown patch occupying the basal part of the wing, bordered broadly behind by a circular golden streak, extending from the costa to the inner border at the basal angle. A very oblique somewhat curved golden streak, dark-margined on both sides, extends from the basal third of the wing near the costa, to the middle of the costa. A large golden patch, dark-margined above, extends from the inner angle to the middle of the wing, with the inner margin between it and the circular basal streak dark golden brown. At the beginning of the costal cilia is a golden dorsal streak; cilia dark brown, in certain lights golden brown. Hind wing dark gray, cilia the same.

The larva makes a conspicuous white blotch mine on the upper surface of the leaf of *Amphicarpæa monoica* (hog pea-nut) from August to October. The head is pale brown; the body pale green, with brownish maculæ along the dorsum, and round dark brown spots on the ventral surface; the ends of the first ring on the sides are yellowish. After the last molting the body is uniform dark green, the "cast" with dorsal maculæ being left within the mine. The imago appears about the middle of May. This insect is one of the most beautiful I have met with.

NOTE. The reader is requested to make the following corrections in the paper contained in the September number of the Proceedings: :

Page 257, line 9 from the top, after "two," insert *or three*.

Page 260, instead of *A. effrentella* read *A. effrenatella*, and also in the explanation of the plate p. 262.

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